



Fire Shelter Inspection Guide and Rebag Direction

Tony Petrilli, Project Leader

Firefighters are instructed to inspect their fire shelter when it is issued to them and periodically throughout the fire season (figure 1). Fire shelters do not have a specified shelf life; their serviceability depends on their condition.

Reviews of fire shelter deployments have shown that a few firefighters deployed fire shelters that had been damaged through years of normal use. Periodic inspections throughout the fire season would have prevented these fire shelters from being deployed in life-threatening situations. Therefore, many firefighters have asked for fire shelter inspection criteria that are easy to follow.



Figure 1—Inspect your fire shelter regularly.

Highlights...

- To avoid carrying damaged fire shelters, firefighters should inspect their fire shelters regularly.
- The condition of shelters can be evaluated based on wear of the protective PVC bag.
- The one-page guide in this tech tip has all the information firefighters need to inspect fire shelters and determine whether to continue carrying them as they are, to rebag them, or to take them out of service.

What Happens to Fire Shelters When They Are Carried?

To determine what happens to shelters carried by firefighters, equipment specialists from the Missoula Technology and Development Center (MTDC) inspected shelters and their polyvinyl chloride (PVC) bags. Some fire shelters that have been inspected appeared to have had little fireline use, while others showed extensive fireline use.

It was no surprise that inspections of these shelters revealed a correlation between the condition of a shelter and the wear shown on the PVC bag. Three signs in particular—a bag that had turned dark gray, holes in the bag, and water in the bag—pointed to excessive shelter wear.

A PVC bag turns dark gray when aluminum rubs off the shelter onto the PVC bag. The more aluminum that has been rubbed off, the more likely it is that the shelter may be damaged. Simply carrying a fire shelter over the course of a fire season could cause this kind of damage.

Holes in the PVC bag allow debris (ash, dirt, sand, or water) into the bag. Debris inside the bag abrades the shelter's outer layers. Large holes or many small holes in the PVC bag make it more likely that debris will damage the shelter.

A white film or dust on the aluminum foil is a sign of corrosion, indicating that water entered the PVC bag. A fire shelter with corrosion may be difficult to shake open during deployment. Water also may break down the bonds between the aluminum foil, silica, and fiberglass cloth (figure 2).



Figure 2—Fire shelters have two layers—the outer layer is silica laminated to aluminum foil, the inner layer is fiberglass laminated to aluminum foil.

In some cases, the PVC bags had worn out, but the shelters inside were still serviceable. Two actions can be taken to address this issue:

1. Replace the carrying cases if needed. The blue nylon duck carrying cases and the hard plastic liners have been redesigned (September 2009). They are now taller and the carrying case's cap is more secure. The flap on the fire shelter sleeve of the blue fireline pack is also more secure. These changes reduce the wear and tear on shelters. The updated fireline pack, carrying case, and plastic liner are available through the GSA "Wildland Fire Equipment Catalog":
 - o Fire Shelter Carrying Case, NSN: 8465-01-498-3190

- o Fire Shelter Carrying Case Liner, NSN: 8465-01-498-3191
- o Fireline Pack, NSN: 8465-01-503-4488
- o Fireline Pack (Complete), NSN: 8465-01-503-4484

2. Rebag the shelters if needed. Use the "Fire Shelter Inspection Guide" included in this tech tip to determine whether a shelter is serviceable for fire use, should be rebagged, or should be taken out of service.

Shelters that:

- o Show evidence of moisture inside the bag (water drops, condensation, or corrosion) should be taken out of service.
- o Have so much aluminum rubbed off that the paper label inside the bag is not readable should be taken out of service.
- o Have already been through the 2004 fire shelter recall, retrofit, and rebagging (label is marked with a red "R") or have been previously rebagged (yellow rebag label is inside the PVC bag) should not be rebagged a second time.

Rebagging can prolong the useful life of a fire shelter.

Two fire shelter manufacturers and one fire shelter PVC bag manufacturer can be used for rebagging fire shelters. Each local unit is responsible for making arrangements to have its fire shelters rebagged.

Each shelter must be assessed using the inspection guide before it is sent for rebagging. **DO NOT REBAG FIRE SHELTERS THAT DO NOT MEET THE INSPECTION GUIDE CRITERIA FOR REBAGGING.** If a fire shelter needs to be taken out of service, take it out! For more information about rebagging fire shelters, contact one of the following:

- Anchor Industries Inc., in Evansville, IN
Web site: <http://www.anchorinc.com/>
Phone: 812-867-2421
- Freedom Manufacturing LLC, in Saratoga Springs, NY
Web site: <http://www.freedommfg.com/>
Phone: 518-584-0441
- Weckworth Manufacturing, Inc., in Haysville, KS
Web site: <http://www.weckworth.com>
Phone: 800-533-8368

Fire Shelter Inspection Guide

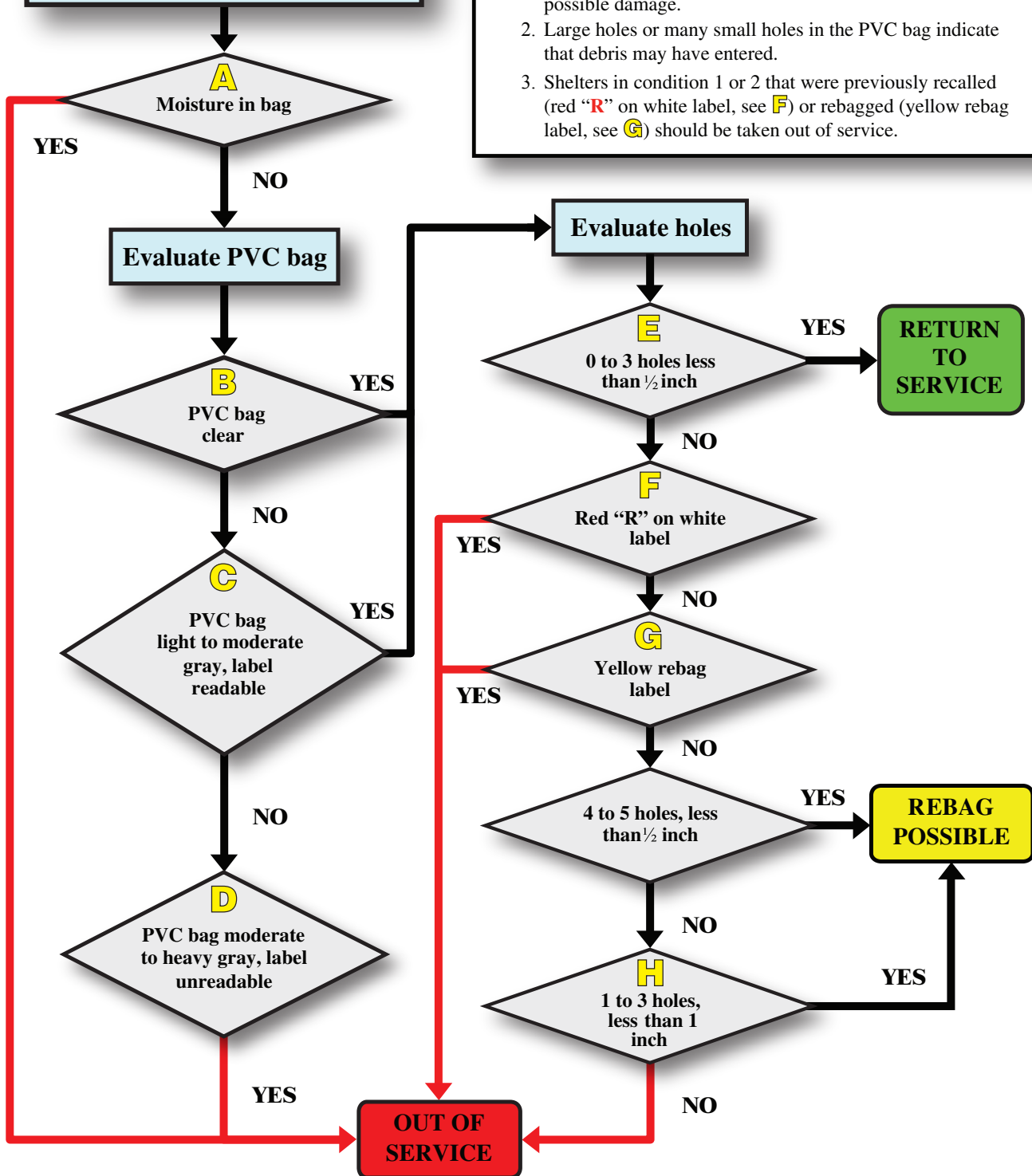
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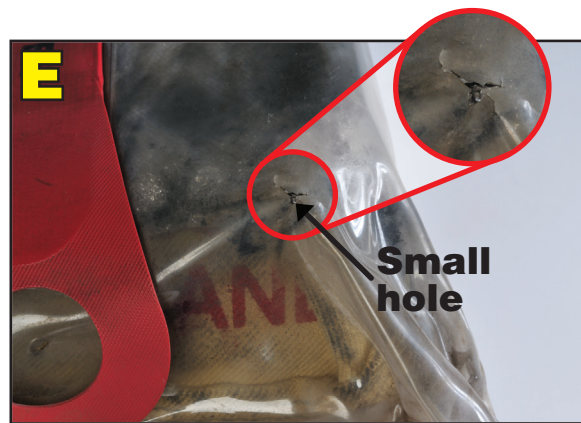
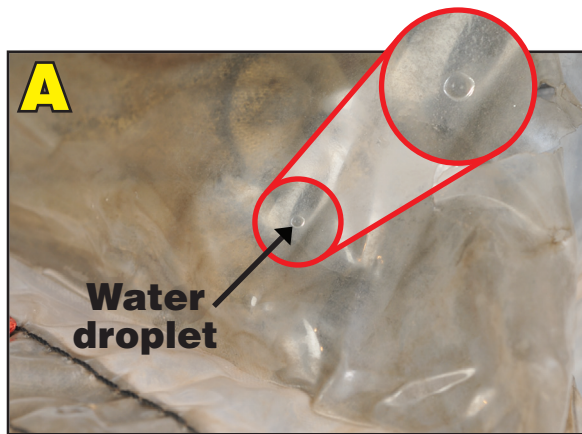
Yellow letters correspond to the photos on the back of this guide

Shelter Condition

Gray on the inside surface of the PVC bag (see **C**) is caused by the aluminum foil rubbing off.

1. A moderate to heavy gray PVC bag (see **D**) indicates possible damage.
2. Large holes or many small holes in the PVC bag indicate that debris may have entered.
3. Shelters in condition 1 or 2 that were previously recalled (red "R" on white label, see **F**) or rebagged (yellow rebag label, see **G**) should be taken out of service.





Use Out-of-Service Shelters for Fire Shelter Training

Fire shelters that are taken out of service should be marked and used for practice deployments. Training shelters, although excellent training tools, do not act exactly as a real fire shelter—tearing open the PVC bag, shaking it out, and being inside one can feel different than a real fire shelter.

- Clearly mark shelters “OUT OF SERVICE—FOR TRAINING ONLY” (figure 3).
- Practice shelter deployments in a high-stress environment, with time constraints, and in different

positions (standing, kneeling, and lying down).

- **NEVER** practice shelter deployments in an actual fire—it’s not worth the risk of injury.

Remember, inspect your fire shelter when it is issued to you and every couple of weeks during the fire season. Inspect your fire shelter if something out of the ordinary happens—for instance, if your fire shelter is submerged in water or exposed to a heavy rain storm, if your fire shelter falls from a truck or high shelf, or if your pack rolls down a hill.



Figure 3—Mark fire shelters that are taken out of service to identify them as training shelters for practice deployments.

[Handwritten signature]

About the Authors

Tony Petrilli is an equipment specialist for the fire and aviation and safety and health programs at MTDC. He has a bachelor's degree in education from Western Montana College. Petrilli began working for the Forest Service in 1982 and joined MTDC full time in 2000. He has worked as a firefighter for the Lewis and Clark and Beaverhead National Forests and as a smokejumper for the Northern Region. He is a division/group supervisor, type III incident commander, and has served on more than 20 fire entrapment review or investigation teams.



Library Card

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This tech tip explains how to inspect fire shelters and the polyvinyl chloride (PVC) bags that protect them. Three signs—a dark gray color of the PVC bag, holes in the bag, and water in the bag—point to excessive shelter wear. A 1-page guide is included to help firefighters decide whether a shelter is still serviceable, whether it can be rebagged for fireline use, or whether the shelter needs to be taken out of service.

Keywords: deployments, equipment, fire, inspections, New Generation fire shelter, PPE, PVC, quality control, safety at work, training, wildland fire fighting, wildland firefighting



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